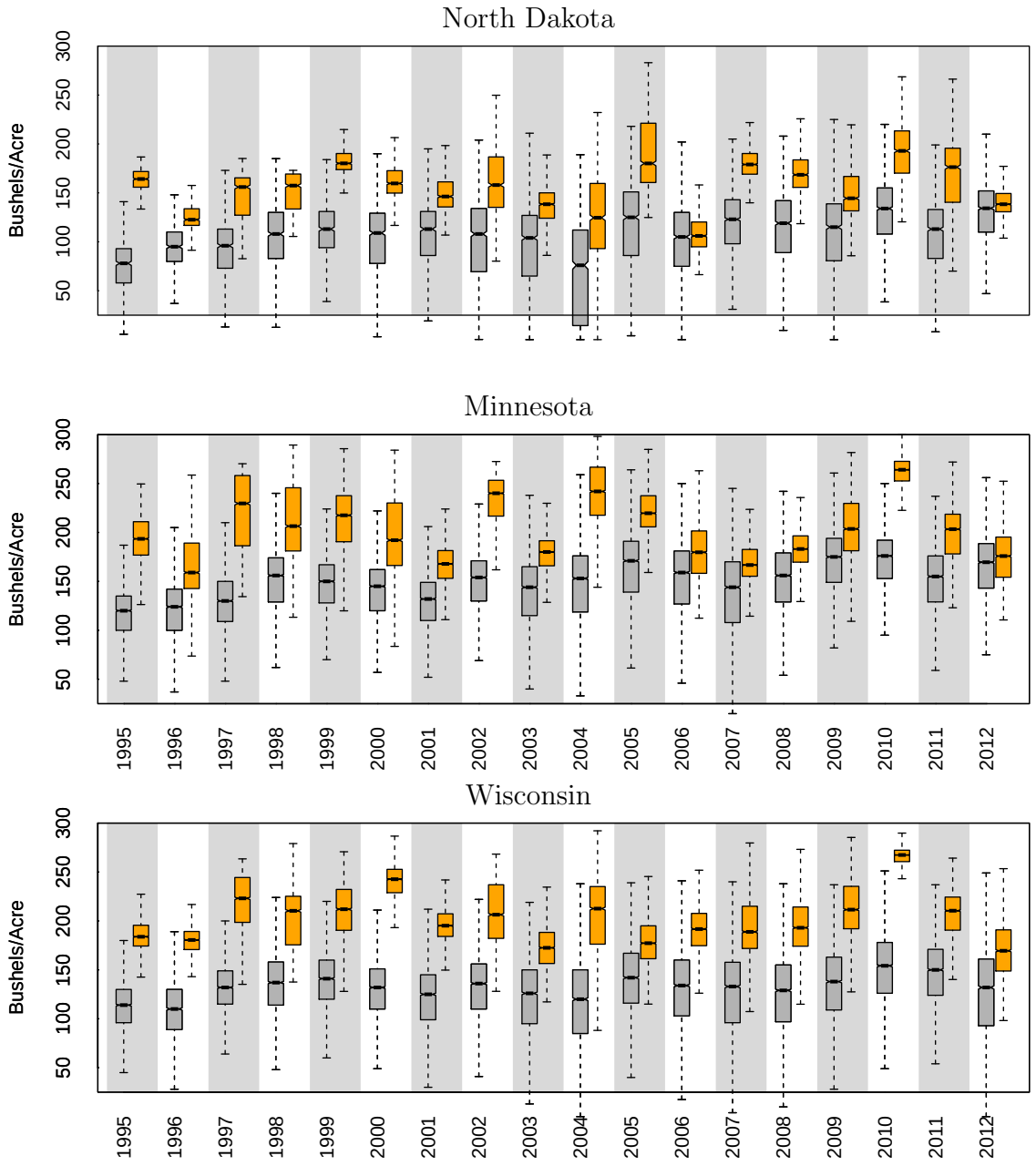
A Appendix for Online Supplement

Table A.1: Comparison of regressions with weather aggregates based on fixed-season and those derived from field-specific planting-dates (PD).

	Regression	Explanatory Variables						Adj. R^2
		Process Model		*Weather Aggregates*				
		ln(Model)	$\frac{\ln(\text{Model})^2}{1000}$	P	$\frac{P^2}{1000}$	$\frac{GDD}{1000}$	$\frac{HDD}{1000}$	
		coefficient estimate (t statistic)						
		Dependent Variable: ln(Actual Yield)						
(a)	Stat w/ Fixed Weather			0.073	-1.419	0.159	-5.225	0.169
				(10.52)	(-10.084)	(2.733)	(-9.401)	
(b)	Stat w/ PD Weather			0.074	-1.447	0.138	-4.62	0.158
				(10.114)	(-9.8)	(2.301)	(-8.363)	
(c)	Combined w/ Fixed Weather	1.605	-0.012	0.011	-0.432	0.168	-4.031	0.228
		(9.895)	(-6.176)	(1.265)	(-2.431)	(3.339)	(-7.683)	
(d)	Combined w/ PD Weather	1.647	-0.012	0.009	-0.411	0.175	-3.621	0.225
		(10.047)	(-6.071)	(0.963)	(-2.229)	(3.279)	(-7.035)	
(e)	Stat + FE w/ Fixed Weather			0.053	-0.983	0.044	-4.254	0.326
				(7.881)	(-6.494)	(0.566)	(-6.992)	
(f)	Stat + FE w/ PD Weather			0.055	-0.991	0.09	-3.057	0.315
				(7.535)	(-5.83)	(1.254)	(-6.049)	
(g)	Comb. + FE w/ Fixed Weather	1.484	-0.012	0.003	-0.177	0.108	-3.216	0.366
		(9.568)	(-6.995)	(0.345)	(-0.862)	(1.648)	(-6.792)	
(h)	Combined + FE w/ PD Weather	1.553	-0.012	0.002	-0.139	0.181	-2.312	0.362
		(9.429)	(-6.719)	(0.202)	(-0.615)	(2.861)	(-5.505)	
		Dependent Variable: ln(Process Model Yield)						
(i)	Fixed Weather			0.065	-0.875	-0.039	-1.52	0.608
				(19.197)	(-12.099)	(-1.161)	(-6.057)	
(j)	PD Weather			0.066	-0.885	-0.07	-1.195	0.601
				(19.342)	(-12.064)	(-2.467)	(-6.381)	
(k)	Fixed Weather + FE			0.058	-0.763	-0.114	-1.494	0.648
				(16.099)	(-10.095)	(-1.756)	(-5.029)	
(l)	PD Weather + FE			0.059	-0.763	-0.138	-1.030	0.642
				(16.742)	(-10.301)	(-2.759)	(-4.926)	

Notes: Each pair of reported regressions compares a specification with fixed-season weather (180 days starting March 1) and an otherwise identical specification that calculates weather aggregates using 180 days starting on the planting date (PD) reported for each field. The main paper reports fixed-season aggregates (the first row of each pair), which is repeated here to ease comparison planting-date specific aggregates. See Table 1 for more details.

Figure A.1: Actual and Process Model Yields: North Dakota, Minnesota, Wisconsin.



Notes: The figures show box plots, by year, of actual and crop-model simulated yields. Box plots of actual yields are in grey and modeled yields are in orange. Each box plot summarizes yields across approximately 10,000 fields (100 fields per county across × 100 counties per state). The top and bottom of each box outlines the 75 and 25 percentiles of the yield distribution, with the notch and line at the median (50th percentile). The whiskers reach out to the most extreme point within 1.5 times the inter-quartile range.

Figure A.2: Actual and Process Model Yields: South Dakota, Iowa, Michigan.

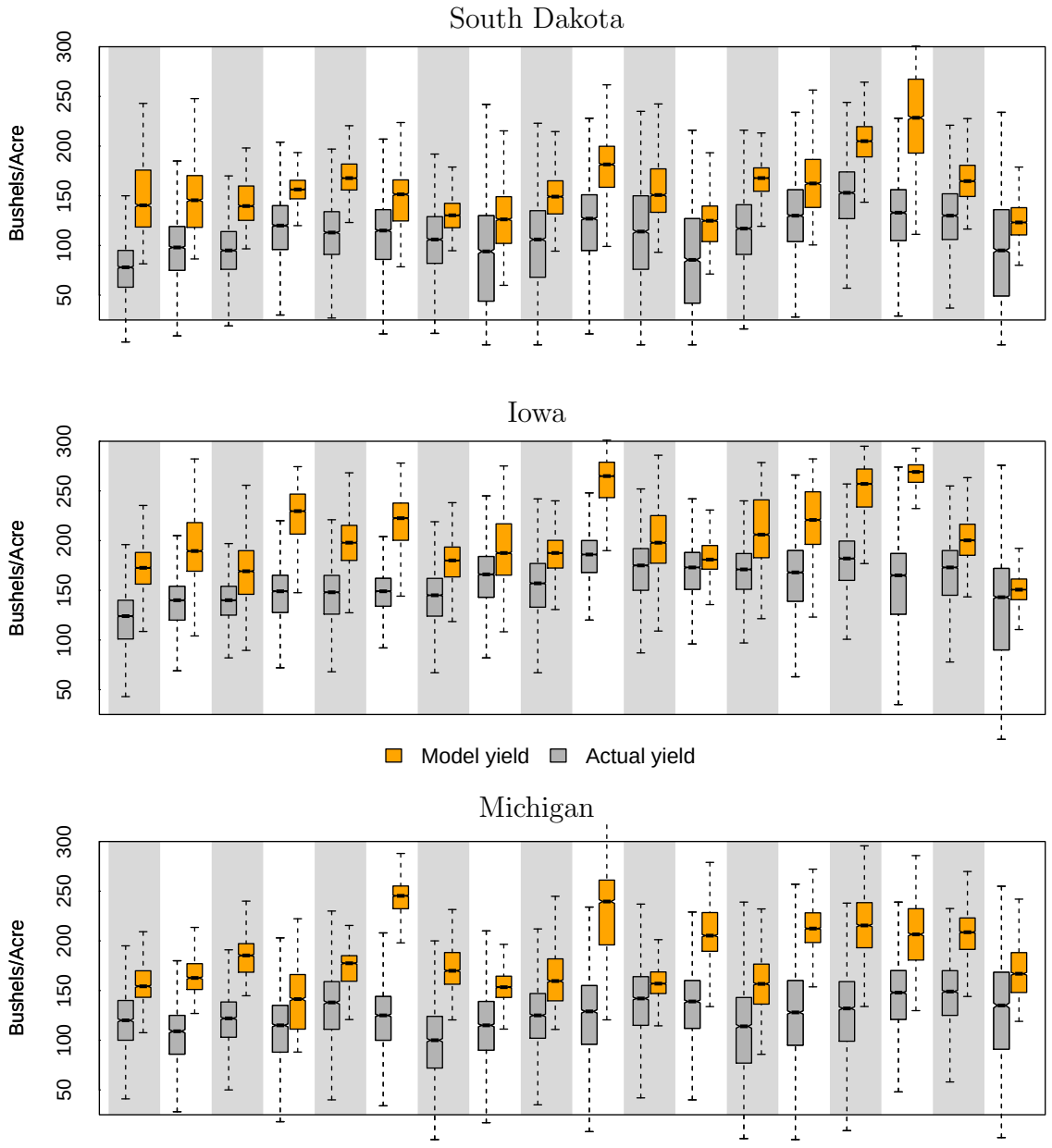


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Figure A.3: Actual and Process Model Yields: Illinois, Indiana, Ohio.

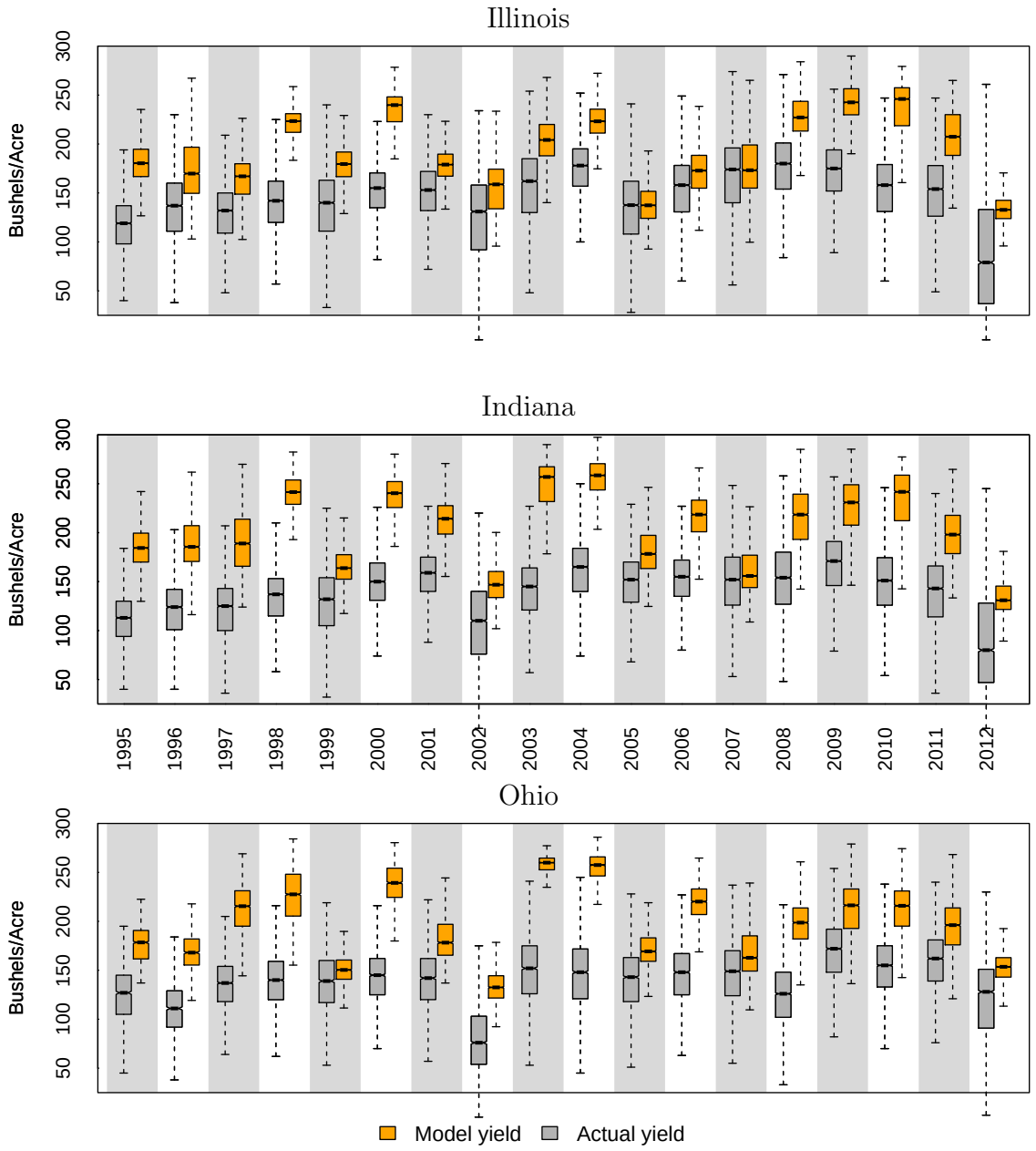

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Figure A.4: Actual and Process Model Yields: Nebraksa, Kansas, and Missouri.

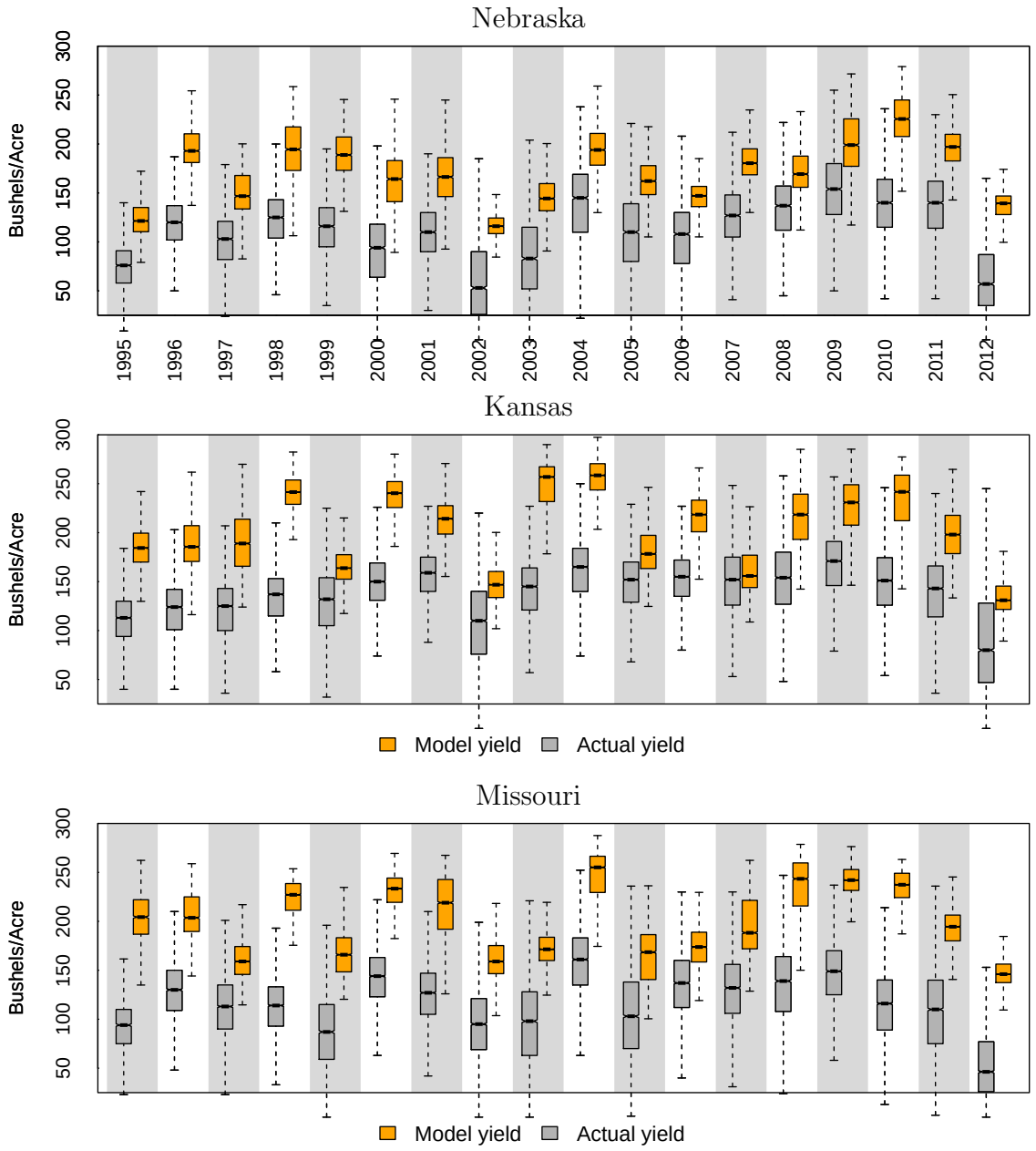

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Figure A.5: State-specific correlations between actual yields, model yields and weather variables